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Applicant	: PERINI
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Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

APPEAL BRIEF

(1) REAL PARTY IN INTEREST.

The real party in interest is Fabio Perini.

(2) RELATED APPEALS AND INTERFERENCES.

There is believed to be no related appeals or interferences.

(3) STATUS OF CLAIMS.

Claims 1-20 are on appeal.

Claims 1-4, 6-10, 13, 16, 17 and 20 stand rejected under 35 U.S.C. 103(a) as being

unpatentable over Eisenschmidt (DE 10043989) in view of Kubo et al. (JP 10249916).

Claims 5, 11, 12, 14, 15, 18 and 19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Eisenschmidt in view of Kubo et al. in further view of McNeil et al. (U.S. 6,030,690).

(4) STATUS OF AMENDMENTS.

An After Final Amendment has not been filed in response to the final Office Action rejection of January 4, 2008.

(5) SUMMARY OF THE CLAIMED SUBJECT MATTER

CLAIM 1:

The present invention relates to an apparatus comprising a compressive means 2 (35 U.S.C. 112, 6th paragraph; Figure 5A; page 6, lines 3-8) for compressing papers webs 5, 6 (page 6, lines 6-8) onto an impression cylinder or roller 4 (Figure 5A; page 6, lines 3-8) while the paper webs 5, 6 advance toward an outlet section (page 6, lines 8-13). The compressive means includes a roller or cylinder 2 (Figure 5A; page 5, lines 14-17; page 6, lines 3-8) having a hardened outer surface 20 (Figure 7; page 4, line 30 through page 5, line 6; page 5, lines 20-22) that is supported by an underlying elastic surface 23 (Figure 7; page 5, lines 14-22). Appellant has discovered that using a roller with a hardened outer surface supported by an elastic surface produces a paper web free of undesired surface deformations. The hard outer surface

advantageously does not penetrate the cavities of the impression roller so that noticable roughness on one of the sides of the paper webs is prevented. This advantageously provides a continuously joined paper web that is of better quality than paper webs produced by conventional techniques.

CLAIM 2:

The elastic surface 23 may be supported by a rigid surface 21 (Figure 7; page 5, lines 14-20).

CLAIM 3:

The outer surface 20 of the compression roller 2 may be a helicoidal body (Figures 6A, 6B, 6C, 6D; page 5, lines 23-24) having a preset pitch and direction (page 5, lines 23-25). The helicoidal body may be in contact with the elastic surface 23 (page 5, lines 23-27).

CLAIM 4:

The outer surface 20 may completely cover the elastic surface 23 (page 5, lines 25-27).

CLAIM 5:

The outer surface 20 of the compression roller 2 may be made of steel (page 5, lines 20-22).

CLAIM 6:

The elastic surface 23 of the compression roller 2 may be made of rubber (page 5, lines 17-20).

CLAIM 7:

The impression cylinder 4 may have surface reliefs and/or depressions (Figures 10A, 11A, 11B, 12A and 12B; page 6, lines 13-19; page 7, lines 16-21; page 7, lines 27-31; page 8, lines 1-8).

CLAIM 8:

The impression cylinder 4 may be an embossing cylinder (page 8, lines 9-10).

CLAIM 9:

Claim 9 relates to a method for carrying out the union of two paper webs 5, 6 (page 6, lines 6-8) by a mutual compression of the paper webs 5, 6. The method comprises compressing paper webs 5, 6 between a pressure roller or cylinder 2 (Figure 5A; page 5, lines 14-17; page 6, lines 3-8) having a hard outer surface 20 (Figure 7; page 4, line 30 through page 5, line 6; page 5, lines 20-22) and an underlying elastic surface 23 (Figure 7; page 5, lines 14-22), and an impression roller or cylinder 4 (Figure 5A; page 6, lines 3-8) having surface reliefs and/or depressions (page 8, lines 1-8). This advantageously allows a continuous paper web to be formed that is free of imperfections.

CLAIM 10:

The impression cylinder may be an embossing cylinder (page 8, lines 9-10).

CLAIM 11:

The hard outer surface 20 of the pressure roller or cylinder 2 may be composed of a single layer of steel (Figure 7; page 5, lines 20-22).

CLAIM 12:

The single layer of steel may be connected to the elastic surface 23 via an adhesive (page 5, lines 20-22).

CLAIM 13:

The hard outer surface 20 may engage the underlying elastic surface 23 (Figure 7; page 5, lines 20-22).

CLAIM 14:

The hard outer surface 20 of the roller or cylinder 2 may be composed of an integral layer of steel (Figure 8; page 7, lines 21-26).

CLAIM 15:

The single layer of steel may be connected to the elastic surface 23 via an adhesive (page

5, lines 20-22).

CLAIM 16:

The hard outer surface 20 may engage the underlying elastic surface 23 (Figure 7; page 5, lines 20-22).

CLAIM 17:

Claim 17 highlights the connection of the hardened outer surface 20 to the elastic inner surface 23. This advantageously allows the hardened outer surface 20 of the roller to press the paper webs 5, 6 against an impression roller 4 to form a continuous paper web 1 that is free of undesired deformations. This significantly increases the quality of the continuous paper web 1.

The present invention relates to an apparatus for continually joining paper webs 5, 6 (page 6, lines 6-8). The apparatus comprises a plurality of paper webs 5, 6 and an impression roller 4 (Figure 5A; page 6, lines 3-8). The impression roller 4 has an outer impression roller surface that defines surface reliefs for contacting one of the paper webs 5, 6 (page 8, lines 1-8). A compressing roller 2 (Figure 5A; page 5, lines 14-17; page 6, lines 3-8) is provided. The compressing roller 2 has a hardened outer surface 20 for contacting another one of the paper webs 5, 6 (Figure 7; page 4, line 30 through page 5, line 6; page 5, lines 20-22) and an elastic inner surface 23 (Figure 7; page 5, lines 14-22). The hardened outer surface 20 engages the elastic inner surface 23 such that the hardened outer surface 20 is disposed opposite the elastic

inner surface 23 (Figure 7; page 5, lines 20-22). The impression roller 4 and the compressing roller 2 define an outlet section (Figure 5A, 8 and 9; page 6, lines 8-13). The compressing roller 2 presses the paper webs 5, 6 against the impression roller 4 when the paper webs 5, 6 pass through the outlet section (page 6, lines 6-19) such that a continuously joined paper web 1 is formed (page 6, lines 6-8).

CLAIM 18:

The hardened outer surface 20 may be composed of a single layer of steel (Figure 7; page 5, lines 20-22).

CLAIM 19:

The single layer of steel may be connected to the elastic layer 23 via an adhesive (page 5, lines 20-22).

CLAIM 20:

The hardened surface 20 may be composed of a plurality of metal elements (Figures, 6A, 6B, 6C, 6D and 7). The metal elements may be connected to the inner elastic surface 23 (Figure 7; page 5, lines 20-22). One metal element may be located at a spaced location from another metal element in a helicoidal configuration along the elastic inner surface 23 (page 5, lines 23-27).

(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL.

Whether claims 1-4, 6-10, 13, 16, 17 and 20 are rejectable under 35 U.S.C. 103(a) as being unpatentable over Eisenschmidt (DE 10043989) in view of Kubo et al. (JP 10249916).

Whether claims 5, 11, 12, 14, 15, 18 and 19 are rejectable under 35 U.S.C. 103(a) as being unpatentable over Eisenschmidt in view of Kubo et al. in further view of McNeil et al. (U.S. 6,030,690).

(7) ARGUMENT.

ISSUE: Whether claims 1-4, 6-10, 13, 16, 17 and 20 are rejectable under 35 U.S.C. 103(a) as being unpatentable over Eisenschmidt (DE 10043989) in view of Kubo et al. (JP 10249916).

CLAIM 1

The present invention relates to an apparatus comprising a roller or cylinder having a hardened outer surface that is supported by an elastic surface. The roller with the hardened outer surface presses paper webs against an impression roller to form a continuously joined paper web. Appellant has discovered that conventional techniques using rollers with a soft surface disadvantageously create unwanted deformations when the roller with the soft surface presses one paper web and another paper web against an impression roller since the soft surface of the roller deforms between the cavities of the embossing cylinder. This disadvantageously

reduces the quality of the paper webs. Appellant's invention solves the problem of eliminating unwanted imperfections when joining one paper web to another paper web to create a continuous paper web.

These features and paper web quality advantages are neither taught nor suggested by the prior art as a whole, including Eisenschmidt and Kubo et al. The references as a whole fail to suggest the combination of features claimed. The prior art as a whole fails to teach the novel combination of a roller having a hard outer surface supported by an elastic surface. This advantageously produces a continuous paper web that is free of noticeable roughness and other undesired surface deformations of the coupled paper webs.

Eisenschmidt is concerned with a pair of rollers 1, 2. Each roller has an engraving 3, 6 on the surface of the roller that projects beyond the roller surface. The rollers are aligned with each other such that the embossing gap forming a place for the common embossing of tissue articles 9 is formed by an aligned radial external engraving sector of the rolls. However, Eisenschmidt fails to teach and fails to suggest the combination of a roller having a hard outer surface supported by an elastic surface. Eisenschmidt merely discloses two engraving rollers 1, 2 that are spaced apart from one another to form an embossing gap. In contrast to Eisenschmidt, the roller of the present invention has a hard outer surface that is located outwardly of an underlying elastic surface. Appellant has discovered that the elastic surface advantageously dampens any vibration created when the roller compresses the paper webs against the impression roller. Appellant has also unexpectedly found that providing a hard outer surface on the roller prevents deformation of the roller when the roller compresses the paper

webs against the impression roller. This advantageously prevents the roller from inadvertently producing undesired alterations to the paper web. Eisenschmidt fails to disclose such advantages since the reference only directs a person of ordinary skill in the art towards an arrangement of engraving rollers, but fails to provide any suggestion for a roller having a hardened outer surface that is supported by an elastic surface. As such the prior art as a whole fails to disclose important aspects of the claimed combination.

Instead of being concerned with an arrangement of engraving rollers for embossing tissue articles, Kubo et al. discloses a sheet extrusion forming roller used in a sheet extrusion forming apparatus for forming a plastic sheet having at least one smooth surface. The sheet extrusion forming roller includes a shaft core 2, a rubber layer 3 that covers the shaft core 2 and a metal layer 4 that covers the rubber layer 3. The metal layer of Kubo et al. includes a seamless tubular product 4a containing nickel as a principle component and a coating film 4b containing chromium as a principle component. However the metal layer of Kubo et al. is not a hard outer surface as claimed. The metal layer of Kubo et al. merely provides a resilient surface. Instead of directing the person of ordinary skill in the art towards a hard outer surface supported by an elastic surface, Kubo et al. directs the person of ordinary skill in the art towards a roller having a resilient outer surface for forming lens function sheets. Kubo et al. fails to address the problem of compressing paper webs to form a single continuous paper web without deforming or adversely altering the web. Kubo et al. merely directs the person of ordinary skill in the art towards solving the problem of maintaining resiliency of an outer surface of the roller. Kubo et al. discloses that if the thickness of the chromium coating film is less than

0.01 mm., the degree of resiliency may not be enough to prevent the tube from easily causing plastic deformation with the local stress. If the thickness exceeds 0.1 mm., the adherence force with the nickel tube decreases and exfoliation of the chromium coating film occurs. Thus, Kubo et al. discloses that a roller having a resilient surface is crucial, but fails to suggest a hard outer surface supported by an elastic surface as claimed. As such, the prior art as a whole fails to teach each feature of the present invention.

CLAIM 2

Claim 2 highlights that the elastic surface is supported by a rigid surface. Kubo et al. fails to disclose a hard outer surface that is supported by an underlying elastic surface and a rigid surface as claimed. Kubo et al. merely discloses a roller having a resilient surface. However, Kubo et al. does not direct a person of ordinary skill in the art towards a roller having a hard surface as claimed. As such, the prior art as a whole takes a different approach and does not provide any suggestion for the features of the present invention as claimed.

CLAIM 3

Claim 3 provides that the outer surface of the compression roller is a helicoidal body having a preset pitch and direction, wherein the helicoidal body is in contact with the elastic surface. Kubo et al. does not direct the person of ordinary skill in the art towards a roller having a hard outer helicoidal body surface that is in contact with an underlying elastic surface. Kubo et al. merely discloses a metal layer 4 that covers the rubber layer 3. However, the metal

layer 4 of Kubo et al. is a resilient surface and not a hard surface as claimed. As such, the prior art as a whole takes a different approach and fails to direct the person of ordinary skill in the art toward a roller having a hard surface as recited in the claimed combination.

CLAIM 4

Claim 4 highlights that the outer surface completely covers the elastic surface. Kubo et al. merely discloses a resilient outer surface. As such, Kubo et al. fails to direct the person of ordinary skill in the art toward a roller having a hard surface that is supported by an underlying elastic surface as claimed. The references as a whole fails to teach each feature of the present invention.

CLAIM 6

The combination of Eisenschmidt and Kubo et al. merely discloses a roller having a resilient surface. However, Eisenschmidt and Kubo et al. fail to provide any suggestion or teaching for the combination of an elastic surface of a compression roller composed of rubber that supports a hard outer surface as claimed. In contrast to Eisenschmidt and Kubo et al., the present invention provides a compression roller having a hard outer surface. This advantageously prevents unwanted deformation when two paper webs are pressed against an impression cylinder to form a continuous paper web. Eisenschmidt and Kubo et al. fail to provide such an advantage since the resilient surface 4 of Kubo et al. would deform when pressed against an embossing cylinder, which would disadvantageously create unwanted

deformations when forming a continuous paper web. As such, the references as a whole fail to disclose a roller having a hard outer surface that is supported by an underlying elastic layer composed of rubber as recited in the claimed combination.

CLAIM 7

Claim 7 provides that the impression cylinder has surface reliefs and/or depressions. The combination of Eisenschmidt and Kubo et al. fails to provide any teaching or suggestion for a hard outer surface that is supported by an underlying elastic surface. Kubo et al. only discloses a roller having a resilient outer surface. However, the resilient outer surface is not a hard outer surface as claimed. As such, the prior art as a whole takes a different approach and fails to disclose the combination as claimed.

CLAIM 8

Claim 8 provides that the impression cylinder is an embossing cylinder. The combination of Eisenschmidt and Kubo et al. merely discloses a roller having a resilient outer surface. However, the references as a whole fail to provide any suggestion or teaching for a roller having a hard outer surface that compresses two paper webs against an embossing cylinder to form a continuous paper web as claimed. Kubo et al. only suggests a roller having an outer resilient surface. This disadvantageously fails to provide a hard outer surface that forms a continuous paper web that is free of unwanted deformations. As such, the prior art as a whole fails to disclose each feature of the claimed combination.

CLAIM 9

Claim 9 highlights a method of a pressure roller that compresses two paper webs against an impression cylinder to form a continuous paper web wherein the pressure roller has a hard outer surface supported by an underlying elastic surface. Eisenschmidt and Kubo et al. fail to teach or suggest a roller having a hard outer surface as claimed. Kubo et al. merely discloses a roller having a resilient outer surface for forming lens function sheets. However, Kubo et al. fails to address the problem of compressing paper webs using a roller having a hard outer surface to form a single continuous paper web without deforming or adversely altering the web. Kubo et al. merely discloses that if the thickness of the chromium coating film is less than 0.01 mm., the degree of resiliency may not be enough to prevent the tube from easily causing plastic deformation with the local stress. If the thickness exceeds 0.1 mm., the adherence force with the nickel tube decreases and exfoliation of the chromium coating film occurs. Thus, Kubo et al. discloses that a roller having a resilient surface is crucial, but fails to suggest a hard outer surface supported by an elastic surface as claimed. As such, the prior art as a whole fails to teach each feature of the present invention.

CLAIM 10

Claim 10 highlights that the impression cylinder is an embossing cylinder. The references as a whole fail to teach and fail to suggest the combination including a roller having a hard outer surface as claimed. At most, the combination of Eisenschmidt and Kubo et al. merely directs the person of ordinary skill in the art toward a roller having a resilient surface.

However, the references as a whole fail to disclose a hard outer surface that is supported by an underlying elastic surface. Kubo et al. addresses the problem of maintaining resiliency of an outer surface of the roller. However, Kubo et al. does not address the problem of providing a hard outer surface that joins two separate paper webs to form a continuous paper web such that no unwanted deformations are formed on the continuous paper web.

CLAIM 13

Claim 13 provides that the hard outer surface engages the underlying elastic surface. The references as a whole fail to teach or suggest the combination of a hard outer surface that engages an underlying elastic surface. At most, the references as a whole merely suggest a roller having a resilient surface, but are void of any suggestion of providing a roller with a hard outer surface to solve the problem of creating a continuous paper web that is free of imperfections. As such, the prior art as a whole takes a different approach and fails to provide any teaching or suggestion for each feature of the claimed combination.

CLAIM 16

The combination of Eisenschmidt and Kubo et al. merely teaches a roller having a resilient outer surface. As such, the references as a whole fail to direct the person of ordinary skill in the art toward a roller having a hard surface that engages an underlying elastic surface as claimed. The references as a whole fail to teach each feature of the present invention.

CLAIM 17

Claim 17 highlights that the hardened outer surface engages the elastic inner surface such that the hardened outer surface is disposed opposite the elastic inner surface. This advantageously allows the formation of a continuous paper web that is free of unwanted imperfections. This significantly increases the quality of the continuous paper web that is produced and reduces any noticeable roughness of the continuous paper. The references as a whole fail to disclose a roller having a hard outer surface. At most, Kubo et al. teaches a roller having a resilient surface. However, the metal surface 4 of Kubo et al. does not provide a hard outer surface as claimed. Kubo et al. clearly discloses that maintaining resiliency of the outer surface of the roller is crucial. Kubo et al. discloses that if the thickness of the chromium coating film is less than 0.01 mm., the degree of resiliency may not be enough to prevent the tube from easily causing plastic deformation with the local stress. If the thickness exceeds 0.1 mm., the adherence force with the nickel tube decreases and exfoliation of the chromium coating film occurs. As such, Kubo et al. only discloses a roller having a resilient surface, but fails to suggest a roller having a hard outer surface that is supported by an elastic surface as claimed. As such, the prior art as a whole fails to teach each feature of the present invention.

Further, the references as a whole fail to teach or suggest the combination of a means for forming a continuous paper web as claimed. Eisenschmidt merely discloses a pair of rollers 1, 2, each having an engraving on the surface, projecting beyond the roll surface. However, the rollers 1, 2 of Eisenschmidt do not join two separate paper webs to form a continuous paper web as claimed. At most, the rollers 1, 2 of Eisenschmidt merely embosses tissue articles 9, but

does not join the tissue articles together to form a continuous tissue article web as claimed. Kubo et al. also fails to disclose a means for forming a continuous paper web as recited in the claimed combination. Kubo et al. clearly discloses a roller that forms lens-function sheets. However, the roller of Kubo et al. does not join two separate paper webs to form a continuous paper web using a roller having a hard surface supported by an underlying elastic surface and an impression cylinder as claimed. As such, the prior art as a whole takes a different approach and fails to teach or suggest the features of the claimed combination.

CLAIM 20

Claim 20 highlights that the hardened surface is composed of a plurality of metal elements that are connected to the inner elastic surface such that one metal element is located at a spaced location from another metal element in a helicoidal configuration along the elastic inner surface. The references as a whole fail to suggest a hard outer surface as claimed. The teachings of Eisenschmidt and Kubo et al. merely suggest a roller having a resilient surface. Kubo et al. discloses that maintaining the resiliency of an outer surface of a roller is crucial, but fails to provide any suggestion for a roller having a hard outer surface as claimed. As such, the references as a whole take a different approach and fail to provide any teaching or suggestion for the features of the claimed combination.

CONCLUSION

The prior art does not teach and does not suggest the combination of features claimed.

The prior art directs the person of ordinary skill in the art toward structures which are dissimilar to the claimed structure. Each of the references teach in a direction away from the combination claimed. The references do not render the claimed subject matter obvious. Accordingly, it is requested that the rejection be reversed and that the claims be indicated to patentably define over the prior art.

ISSUE: Whether claims 5, 11, 12, 14, 15, 18 and 19 are rejectable under 35 U.S.C. 103(a) as being unpatentable over Eisenschmidt in view of Kubo et al. in further view of McNeil et al. (U.S. 6,030,690).

CLAIM 5

The references as a whole fail to suggest the combination of features claimed. Specifically, the references as a whole fail to provide any suggestion for the combination of a roller having a hard outer surface that is supported by an underlying elastic surface as claimed. Although McNeil et al. generally discloses a steel roller, the references as a whole fail to provide any suggestion of using the teachings of McNeil et al. to modify the rollers of Kubo et al. and Eisenschmidt. As such, the references do not suggest the invention and therefore all claims define over the prior art as a whole.

CLAIM 11

Although McNeil et al. teaches a process for high pressure embossing a single ply of

paper, the references as a whole fail to suggest the combination of features claimed. Specifically, the references as a whole fail to provide any suggestion for the combination of a roller having a hard outer surface that is supported by an inner elastic surface as claimed. Although McNeil et al. generally discloses rollers made of steel, McNeil et al. fails to appreciate the problem of creating a continuous paper web that is free of imperfections by using a roller having a hard outer surface that engages an elastic inner surface as claimed. As such, the references as a whole fail to direct the person of ordinary skill in the art toward the features of the claimed combination.

CLAIM 12

The references as a whole fail to teach and fail to suggest the combination of a roller having a hard outer surface composed of a single layer of steel that is connected to the elastic surface via an adhesive. At most, the references as a whole disclose a roller having a resilient surface. However, the references are completely void of attaching a hard outer surface to an elastic surface via an adhesive as claimed. Neither Eisenschmidt, Kubo et al. nor McNeil et al. mention anything about using adhesive to connect an outer layer of a roller to an inner elastic surface. As such, the prior art as a whole fails to disclose each feature of the claimed combination.

CLAIM 14

Claim 14 highlights that the hard outer surface of the roller or cylinder is composed of

an integral layer of steel. The references as a whole fail to teach or suggest a roller having a hard outer surface that is supported by an underlying elastic surface as claimed. At most, the references as a whole only disclose a roller having a resilient outer surface. However, the references as a whole fail to address the problem of creating a continuous paper web without any imperfections using a roller that has a hard outer surface. As such, the prior art as a whole takes a different approach and fails to direct the person of ordinary skill in the art toward a roller having a hard outer surface as claimed.

CLAIM 15

Claim 15 highlights that the hard outer surface is composed of a single layer of steel that is connected to the elastic surface via an adhesive. The references as a whole are completely void of any mention of using an adhesive to connect an outer surface of a roller to an inner elastic surface. Kubo et al. merely discloses a metal layer 4 that covers a rubber layer. However, Kubo et al. fails to disclose that the metal layer 4 is connected to the rubber layer 3 via an adhesive. Further, McNeil et al. And Eisenschmidt merely disclose metal rollers, but the references as a whole do not provide any mention of an outer surface of a roller that is connected to an inner elastic layer via an adhesive as claimed. As such, the references as a whole fail to provide any teaching or suggestion for each feature of the present invention.

CLAIM 18

Claim 18 highlights that the hardened outer surface is composed of a single layer of

steel. The references as a whole fail to teach and fail to suggest a roller having a hard outer single layer steel surface that engages an elastic inner surface. At most, the references as a whole teach an outer surface that is resilient. As such, the prior art as a whole takes a different approach and fails to disclose the combination as claimed.

CLAIM 19:

Claim 19 provides that the hard outer surface is composed of a single layer of steel. According to the present invention, adhesive connects the single layer of steel to the elastic layer. The references as a whole are completely void of any mention of using adhesive to connect a hard outer surface to an inner elastic surface. Kubo et al. merely discloses a metal layer 4 that covers a rubber layer. However, Kubo et al. fails to disclose that the metal layer 4 is connected to the rubber layer 3 via an adhesive. Further, McNeil et al. and Eisenschmidt merely disclose metal rollers, but neither McNeil et al. nor Eisenschmidt provide any mention of an outer surface of a roller that is connected to an inner elastic layer via an adhesive as claimed. As such, the references as a whole fail to provide any teaching or suggestion for each feature of the present invention.

CONCLUSION

As the claims define a nonobvious combination of features, it is requested that the Examiner's decision be reversed with regard to the rejection of the claims as stated in the final rejection.

Respectfully submitted
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71699-10

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SHOULD ANY OTHER FEE BE REQUIRED, THE PATENT AND TRADEMARK OFFICE IS HEREBY REQUESTED TO CHARGE SUCH FEE TO OUR DEPOSIT ACCOUNT 13-0410.

(8) CLAIMS APPENDIX

1. An apparatus for continually joining paper webs, the apparatus comprising:

a compressive means for compressing paper webs onto an impression cylinder or roller while the webs advance toward an outlet section of the apparatus, said compressive means including a roller or cylinder having a hard outer surface supported by an underlying elastic surface.

2. An apparatus according to claim 1, wherein said elastic surface is supported by a rigid surface.

3. An apparatus according to claim 1, wherein said outer surface of said compression roller is a helicoidal body having a preset pitch and direction, said helicoidal body being in contact with said elastic surface.

4. An apparatus according to claim 1, wherein said outer surface completely covers said elastic surface.

5. An apparatus according to claim 1, wherein said outer surface of said compression roller is made of steel.

6. An apparatus according to claim 1, wherein said elastic surface of said compression

roller is made of rubber.

7. An apparatus according to claim 1, wherein said impression cylinder has surface reliefs and/or depressions.

8. An apparatus according to claim 1, wherein said impression cylinder is an embossing cylinder.

9. A method for carrying out the union of two paper webs by a mutual compression of paper webs, the method comprising:

compressing paper webs between a pressure roller or cylinder having a hard outer surface and an underlying elastic surface, and an impression roller or cylinder having surface reliefs and/or depressions.

10. A method according to claim 9, wherein said impression cylinder is an embossing cylinder.

11. A method according to claim 9, wherein said hard outer surface of said pressure roller or cylinder is composed of a single layer of steel.

12. A method according to claim 11, wherein said single layer of steel is connected to

said elastic surface via an adhesive.

13. A method according to claim 9, wherein said hard outer surface engages said underlying elastic surface.

14. An apparatus according to claim 1, wherein said hard outer surface of said roller or cylinder is composed of an integral layer of steel.

15. An apparatus according to claim 14, wherein said single layer of steel is connected to said elastic surface via an adhesive.

16. An apparatus according to claim 1, wherein said hard outer surface engages said underlying elastic surface.

17. An apparatus for continually joining paper webs, the apparatus comprising:

a plurality of paper webs;

an impression roller having an outer impression roller surface defining surface reliefs for contacting one of said paper webs;

a compressing roller having a hardened outer surface for contacting another of the paper webs and an elastic inner surface, said hardened outer surface engaging said elastic inner surface such that said hardened outer surface is disposed opposite said elastic inner surface, said

impression roller and said compressing roller defining an outlet section, said compressing roller pressing said paper webs against said impression roller when said paper webs pass through said outlet section such that a continuously joined paper web is formed.

18. An apparatus according to claim 17, wherein said hardened outer surface is composed of a single layer of steel.

19. An apparatus according to claim 18, wherein said single layer of steel is connected to said elastic layer via an adhesive.

20. An apparatus according to claim 17, wherein said hardened surface is composed of a plurality of metal elements, said metal elements being connected to said inner elastic surface, one metal element being located at a spaced location from another metal element in a helicoidal configuration along said elastic inner surface.

(9) Evidence appendix

NONE

(10) Related proceedings appendix

NONE